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EXAMINER	
DO, CHAT C	

ART UNIT	PAPER NUMBER
2193	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/041,044	Y. C. LIM	
	Examiner	Art Unit	
	Chat C. Do	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment filed 08/06/2007.

2. Claims 1-6 are pending in this application. Claims 1 and 4 are independent claims. In Amendment, claims 1-6 are amended. This Office Action is made final.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyer (U.S. 4,947,360) in view of King et al. (U.S. 7,123,728).

Re claim 1, Dyer discloses in Figures 1-2 multichannel digital filter bank (e.g. abstract and Figure 1) comprising: a plurality of first order or second order digital filters (e.g. Figures 1 and 3 as first order digital filter), connected in a cascade fashion (e.g. Figure 1 wherein digital filter 3 is cascaded to digital filter 1), whereby electrical signals are enhanced, attenuated or kept the same, after passing through cascading sub-filters (e.g. Figure 3 wherein the filtered electrical signals must be in either enhanced or improve, attenuated or distorted, or same signal), wherein first order or second order digital filters are of the recursive type via a communication path (e.g. Figure 1 wherein

the recursive type occurs with feedback signal and the communication path is the path that lead to the input of the DSP from the source) wherein first or second order digital filters do not require multiple sampling frequencies (e.g. col. 3 lines 45-65 wherein only one frequency is used per digital filter at a time).

Dyer fails to disclose in Figures 1-3 the graphics equalizer utilizing the filter, the filter is suitable for graphically equalizing electrical signals received via a communication path, and first and second order digital filters have programmable parameters which allow users to shape graphics equalizer's frequency spectra as desired. However, King et al. disclose in Figures 1-11 3 the graphics equalizer utilizing the filter (e.g. col. 1 lines 10-33 and Figures 1-2 as graphics equalizer), the filter is suitable for graphically equalizing electrical signals received via a communication path (e.g. Figures 4-11 and col. 2 lines 17-35 wherein the signal is filtered from the input source according to the adjustable filter shape by the user), and first and second order digital filters have programmable parameters which allow users to shape graphics equalizer's frequency spectra as desired (e.g. col. 1 line 63 to col. 2 line 38, col. 5 lines 30-68 and Figure 4 wherein the graphical equalizer is generated based on the user input parameters into 416 as example).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the graphics equalizer utilizing the filter, the filter is suitable for graphically equalizing electrical signals received via a communication path, and first and second order digital filters have programmable parameters which allow users to shape graphics equalizer's frequency spectra as desired as seen in King et

al.'s invention into Dyer's invention because it would enable the user to easily enhance input signal by adjusting the parameters to desired frequency response of an equalizer (e.g. col. 1 lines 10-17 and col. 5 line 60 to col. 6 line 4).

Re claim 2, Dyer further discloses in Figures 1-2 digital filters are first order and have a transfer function whose equation is $H_j(z) = (1-az^{-1})/(1-bz^{-1})$ (e.g. B(z) equation in col. 2 line 29 wherein $b = K_3$ and $a = -(K_2K_4-K_3)$) absolute values of a and b are <1; a and b have the same sign (e.g. all values of coefficients are cited in Table 1 in col. 4 less than 1).

Re claim 4, it is a method claim having similar limitations as cited claim 1. Thus, claim 4 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 5, it is a method claim having similar limitations as cited claim 2. Thus, claim 5 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

5. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyer (U.S. 4,947,360) in view of King et al. (U.S. 7,123,728), as applied to claims 1 and 4 respectively, in further view of Cox et al. (U.S. 5,353,346).

Re claim 3, Dyer in view of King et al. fail to disclose filters are second order and have a transfer function whose equation is $H_i(z) = \{1-2g_i\cos(p_i)z^{-1}+g_i^2z^2\}/\{1-2r_i\cos(p_i)z^{-1}+r_i^2z^2\}$. However, Cox et al. disclose in Figure 2 filters are second order and have a

transfer function whose equation is $H_i(z) = \{1-2g_i\cos(p_i)z^{-1}+g_i^2z^2\}/\{1-2r_i\cos(p_i)z^{-1}+r_i^2z^2\}$ (e.g. H(z) in col. 3 line 50 wherein g = 1; r = beta; p = 2pif_estT as seen in col. 6 line 10).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add filters are second order and have a transfer function whose equation is $H_i(z) = \{1-2g_i\cos(p_i)z^{-1}+g_i^2z^2\}/\{1-2r_i\cos(p_i)z^{-1}+r_i^2z^2\}$ as seen in Cox et al.'s invention into Dyer in view of King et al.'s invention because it would enable to provide superior filter with low computational complexity (e.g. abstract and col. 1 line 61 to col. 2 line 4).

Re claim 6, it is a method claim having similar limitations as cited claim 3. Thus, claim 6 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Response to Arguments

6. Applicant's arguments filed 08/06/2007 have been fully considered but they are not persuasive.

a. The applicant argues in page 4 for claim 1 that the secondary reference does not provide control or design for a graphics equalizer as cited in the instant application wherein the graphic equalizer provides a plurality of bandpass filters which each of the bandpass filter allows a component of a signal in the bandpass frequency range to pass through the bandpass filter. These components are then added together to yield the result.

The examiner respectfully submits that the current claim language does not distinct from references, particularly the secondary reference by King et al. In the

body of the claim, the limitation "said first order or second order digital filters are...for graphically equalizing... via a communication path" is either clearly or expressively seen in the secondary reference wherein Figure 4 clearly shows a equalizer for graphically equalizing the input signal from the source by allowing the operator/user to manually and directly adjusting/changing the parameters/characteristics of filter in order to achieve the desired frequency response. The claim does not clearly define or require the graphic equalizer provides a plurality of bandpass filters which each of the bandpass filter allows a component of a signal in the bandpass frequency range to pass through the bandpass filter and these components are then added together to yield the result as alleged by the applicant.

b. The applicant argues in page 5 first paragraph for claim 1 that King does not disclose the cascaded filter as serial manner wherein the instant application requires or uses serially cascaded connection of the first and second order digital filter.

The examiner respectfully submits that the limitation of serially cascaded connection of the first and second order digital filter is seen in the primary reference by Dyer as clearly addressed in the rejection (e.g. a plurality of first order or second order digital filters (e.g. Figures 1 and 3 as first order digital filter), connected in a cascade fashion (e.g. Figure 1 wherein digital filter 3 is cascaded to digital filter 1)). Thus, this limitation does not necessary to be seen or shown in the secondary reference. The examiner combines the secondary

reference by King et al. into the primary reference by Dyer in order to show the missing limitation which is the graphically equalizing that allow users to shape the spectra of filter.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

c. U.S. Patent No. 5,572,443 to Emoto et al. disclose an acoustic characteristic correction device.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

September 26, 2007